

and that therefore should be excluded here, just as Judge Linsider removed them in New York. AT&T/WCOM Cost Br. at 117-118.

c. Advertising Expenses

Verizon argues that it should be allowed to recover its 1999 retail advertising expenses on the theory that Verizon supposedly will engage in an unidentified amount of wholesale advertising at some undefined time in the future. Verizon Cost Brief at 75-77. It is undisputed, however, that Verizon engages in almost no wholesale advertising today, and the record is devoid of evidence that wholesale advertising likely would increase significantly in the future – let alone approximate the level and expense of Verizon’s retail advertising. *Compare id. with* AT&T/WCOM Cost Br. at 118-119. A CLEC should have the choice of whether and to what extent it wants to advertise for customers; it should not be forced to pay Verizon to advertise for it through an advertising campaign directed at the CLEC’s’ customers. CLECs also should not be forced to pay for advertising directed at the CLECs themselves; CLECs are knowledgeable consumers and will purchase based on price, not advertising, which only raises UNE costs.

d. Merger Expenses

As AT&T/WorldCom demonstrated in their initial brief, Verizon convinced regulators to approve the Bell Atlantic/NYNEX and Verizon/GTE mergers in part on the basis of the efficiencies that it anticipated would result from those mergers. Verizon included such savings in the cost models it presented in New York, and Judge Linsider’s recommended decision included such savings. Tr. 3835 (Minion). When Verizon did not include any projected savings from its mergers in its Virginia cost models, AT&T/WorldCom restated Verizon’s studies to include the merger savings that Verizon proposed in the New York proceeding – a combined 2.6% reduction in the joint and common cost factor. *See* AT&T/WCOM Cost Brief at

119-20.³¹ This is conservative because it does not include merger-related savings in other expense categories.

Verizon's responses on the matter of merger savings are truly astounding. First, Verizon claims that any merger savings from the NYNEX merger that might exist were captured in Verizon's 1999 expenses. But Verizon's 1999 expenses obviously could not include the additional savings realized in the year 2000 or in any of other subsequent years. Verizon's 1999 expenses also could not include a penny of savings from the GTE merger, which did not even take place until 2000.

Recognizing the bankruptcy of this argument, Verizon goes on to assert that any merger savings from the NYNEX and GTE mergers are reflected in its productivity adjustment. But Verizon makes no attempt to explain how this is or could be so. Moreover, there is no obvious adjustment for or even any mention of mergers in the document produced by Verizon as support for the productivity adjustment. Indeed, the document does not even reveal any dramatic increase in the volume of business throughput resulting from either merger. *See* WCOM Ex. 108; Verizon's attachment, 2000LBRPROD05-15.xls, produced in response to question nine of AT&T/WorldCom's sixth discovery request.

That Verizon's proposed productivity adjustment includes no NYNEX and GTE merger savings is conclusively established by the UNE proceedings in New York, where Verizon included merger savings in its cost models in addition to its proposed productivity adjustment (above inflation) and where Judge Linsider included such merger savings in his recommended decision. Moreover, the combined 2.6% reduction in the joint and common cost factor that Judge Linsider accepted in New York to account for merger savings was a reduction that was

³¹ In the New York proceeding, Verizon calculated savings for the years 1998 and "2000 and Beyond" for the NYNEX merger and for the years "2001 and Beyond."

proposed by Verizon as an accurate assessment of the amount of merger savings that would exist above and beyond any merger savings that somehow might be inadvertently captured by Verizon's proposed productivity factor. *See Recommended Decision on Module 3 Issues*, New York Case 98-C-1357 at 62-63 (New York State Public Service Commission, May 16, 2001) ("*Recommended Decision*"); *see also id.* at 37-40.

e. Copper Repair Expense

While Verizon proposes to reduce its 1999 repair expenses for copper cable by 5% to reflect the savings that would be incurred in a forward-looking environment, AT&T/WorldCom have shown that this reduction should be increased to 30%. Although Verizon claims that AT&T's 30% figure is without foundation in the record, Verizon Cost Br. at 73-75, Verizon's own brief admits that the copper cable in Verizon's network is "over 30 years old." *Id.* at 73, AT&T/WCOM Ex. 12 (AT&T/WorldCom Recurring Cost Panel Reb.) at 88-89. The extremely conservative nature of the proposed 30% factor is confirmed by the extreme lengths to which Verizon goes in an attempt to dismiss the 90% repair reduction estimate of Verizon's own engineers contained in Verizon's own internal business records as not only "arbitrary" but "fantasy." Verizon Cost Br. at 74.³² Verizon's attempt to retreat from its own outside plant rehabilitation estimate cases is nothing short of remarkable. On their face, Verizon's estimate authorization documents (which Verizon uses to approve capital expenditures) reveal that Verizon routinely expects to achieve a 90% reduction in expenses as a result of plant rehabilitation. The 90% reduction in expenses reflected in these documents is part of the NPV calculation used to quantify the savings and the payback period. AT&T/WCOM Cost Br. at 186-187.

³² Verizon incorrectly claims that AT&T/WorldCom are relying on Maryland documents. Verizon Cost Br. at 73. In fact, AT&T/WorldCom are relying on Virginia documents. *See* WCOM Ex. 109-111.

In fact, the number of defective pairs in Verizon's plant alone provides ample opportunities for plant rehabilitation. Verizon Cost Br. at 75; AT&T/WCOM Cost Br. at 187. In a forward-looking network, less than 1% of the pairs would be defective, which should result in substantial reductions in repair expenses for rehabilitated plant. AT&T/WCOM Cost Br. at 187-188. The cost savings attributable to plant rehabilitation that are reflected in Verizon's outside plant relief estimate authorization cases far exceed the paltry 5% reduction that Verizon proposes here. If anything, Verizon's contention that its outside plant estimate authorization material contains meaningless, arbitrary values suggests that its capital expenditures -- which are based upon these same documents -- undoubtedly reflect gross inefficiencies which would not be experienced by a forward-looking entrant.³³

Equally infirm is Verizon's analysis regarding maintenance expenses in the forward-looking network. Consistent with its misguided approach in this proceeding, Verizon alleged in the proceeding before Judge Linsider that "M dollars," the expenses attributable to rearrangements associated with customer moves, network upgrades, and changes, would not decline in the forward-looking environment. However, Judge Linsider in his *Recommended Decision* in the New York UNE Proceeding flatly rejected the precise argument that Verizon raises here, stating (at 50-51):

Turning first to the treatment of 'M dollars,' Verizon has failed to refute the reasonable expectation expressed by both the Commission and its staff and seemingly adopted by SBC...that moves and rearrangements will be less costly in forward-looking system. Verizon's testimony says only that 'even if has in place an optimally designed network, it will still be required to reconfigure

³³ Verizon states that the actual improvement in one tracking unit was 75%, not 90%. Even if that were true, and even if, as Verizon implies, the statewide plant in Virginia had only one-third as many defective pairs as this tracking unit (Verizon Cost Br. at 74 n.71), it would be reasonable to expect a maintenance reduction statewide of 25% (1/3 of 75%) -- close to the 30% used by AT&T/WorldCom.

its facilities to reflect new municipal ordinances and movement of customers.’ That, of course, is true; but Verizon fails to address itself to the extent to which those activities will be less costly than they have been in the past and to the efficiencies cited by SBC.

Notably, although Verizon characterizes the 30% reduction in maintenance expenses proposed by AT&T/WorldCom as nothing more than pure “fantasy,” Judge Linsider ordered a 30% reduction from embedded levels for “M” dollars—an approach entirely consistent with that taken by AT&T/WorldCom in this proceeding. Verizon Cost Br. at 51; *Recommended Decision* at 51.

f. Nonrecurring And Other Support Factor Adjustments

Finally, Verizon asserts that the non-recurring provisioning revenue and the ongoing costs of OSS should be excluded from these expenses and should be recovered as part of Verizon’s non-recurring cost model. Verizon Cost Br. at 77-78. These assertions are misguided. Because many of Verizon’s daily maintenance and rearrangement activities involve tasks identical to those that Verizon claims should be the subject of a non-recurring charge, most of Verizon’s non-recurring activities are already being recovered in the recurring rates and thus should not be recovered as a separate charge. Similarly, the OSS charges removed here are already being recovered in the loop rate. *See* AT&T/WCOM Ex. 12 (AT&T/WCOM Recurring Cost Panel Reb.) at 93-94.

F. Loop Costs

1. Line Counts

Verizon claims that AT&T/WorldCom use inflated line counts in the Synthesis Model relating to high capacity services that artificially increase the number of loops and thereby yield improperly low loop costs. Verizon Cost Br. at 152-54. The line count issue is important

because the high capacity and special access services using DS-1 and DS-3 facilities share common costs with POTS service, and these common costs should be allocated among the POTS facilities and special access facilities in an appropriate manner. AT&T/WCOM Ex. 14 (Pitkin Surreb.) at 45. The FCC has already acknowledged this point and determined that the Synthesis Model should use DS-0 equivalents in estimating the cost of POTS loops. *Id.* at 44. By contrast, Verizon would treat the POTS and the high capacity services as largely distinct networks that do not share costs.

Verizon's argument that the line counts are inflated is based on a fundamental misconception. Verizon makes the erroneous assumption that AT&T/WorldCom are treating, in the model, one DS-1 loop as equivalent to 24 DS-0 loops when in fact AT&T/WorldCom made clear in written testimony and during the hearings that the underlying assumption in the line count inputs is that 8 DS-0 loops were being modeled for each special access service. AT&T/WCOM Ex. 1 (Pitkin Dir.) at 25; Tr. 4479-86, 4525-27 (Pitkin); AT&T Ex. 129. Moreover, once adjustments are made for this error and for Verizon's failure to include millions of non-switched lines in its reported line count, it is clear that AT&T/WorldCom's line count overstates costs for POTS loops. AT&T/WCOM Ex. 14 (Pitkin Surreb.) at 72.

AT&T/WorldCom's line count data are based on ARMIS and information provided by Verizon in discovery. Verizon criticizes AT&T/WorldCom for failing to use physical pairs rather than DS-0 equivalents in determining line counts but failed to provide physical pair data in response to data requests from AT&T/WorldCom. Of course, that failure to provide such data does not stop Verizon from criticizing AT&T/WorldCom for not using the unavailable physical pair data in its evidence. AT&T/WCOM Ex. 14 (Pitkin Surreb.) at 48 & n.42.

AT&T/WorldCom use the same methodology used by the Commission in determining DS-0 equivalents, and indeed, the same DS-0 equivalent methodology used by Verizon

in this proceeding in allocating the costs of fiber, poles, and conduit. AT&T/WCOM Ex. 15P (Baranowski Surreb.) at 6-8; AT&T/WCOM Ex. 14 (Pitkin Surreb.) at 47. The fact that Verizon uses the same DS-0 equivalent methodology in this proceeding again does not stop Verizon from criticizing AT&T/WorldCom for taking the same approach.

Verizon's claims that the allegedly inflated line counts produce unreasonably low cable and feeder lengths are groundless. Verizon Cost Br. at 154-55. With respect to the cable lengths, Verizon's analysis is mistaken because Verizon divides the Synthesis Model total drop length by the number of lines and not by the number of drops. Making the correct calculation yields an average drop length of 74 feet, which is consistent with Verizon's claimed standard. AT&T/WCOM Ex. 14 (Pitkin Surreb.) at 40.³⁴ With respect to feeder lengths, AT&T/WCOM demonstrated that Verizon's criticism is incorrect. The Synthesis Model feeder lengths are within [BEGIN VERIZON PROPRIETARY] [END VERIZON PROPRIETARY] percent of Verizon's actual reported feeder lengths. *Id.* at 34. Moreover, TELRIC standards require the efficient design of outside plant, holding wire center locations constant, and Verizon does not even assert that the Synthesis Model design is inefficient. *Id.*

2. DS-1, DS-3 And High Capacity Services

Verizon argues that AT&T/WorldCom's use of DS-0 equivalents substantially understates loop costs and fails to allow Verizon to recover its network costs. Verizon Cost Br. at 143-50. As noted above in the discussion of line counts, the most significant error is Verizon's unsupported assertion that AT&T/WorldCom's inputs are based on the underlying assumption of 24 DS-0s per physical line when in fact AT&T/WorldCom assume 8 DS-0s for each physical line based on actual data reported by Verizon in ARMIS. AT&T/WCOM Ex. 1

³⁴ If the average drop length is 74 feet, then the length of each copper pair in the cable is also 74 feet.

(Pitkin Dir.) at 25. Verizon's arguments about the Synthesis Model's economies of scale are largely resolved once this error is corrected, and the 8 DS-0 per physical pair relationship allows the appropriate sharing of common cost among the POTS and high capacity services. AT&T/WCOM Ex. 14P (Pitkin Surreb.) at 46.

AT&T/WorldCom have been consistent in their development of costs relating to high capacity services. *Id.* By contrast, Verizon seeks to use inconsistent approaches to high-capacity services, arguing for use of physical pairs in connection with line counts (that would lower line counts and thereby increase costs per line two-wire loop) but then using 24 DS-0 equivalents per DS-1 to calculate the UNE costs for advanced services. Verizon cannot have it both ways, and as AT&T/WorldCom have argued, the cost principles must be applied on a consistent basis.

Verizon is also off base in claiming that the Synthesis Model does not produce the electronics and other investment necessary to provide the DS-1, DS-3, and other high-capacity services. Verizon Cost Br. at 144. The Synthesis Model builds all the facilities necessary to provide all POTS and advanced capacity services.³⁵ Tr. 4479 (Pitkin). In fact, the Synthesis Model develops costs associated with DS-1 line cards by applying a multiplier of 4.3 to DS-0 line card costs. Thus, AT&T/WorldCom have been extremely conservative in developing the cost of electronics for DS-1 services by including 4.3 times the electronics cost of DS-0 services. AT&T/WCOM Ex. 1 (Pitkin Dir.) at 26. As a result, the Synthesis Model produces sufficient investment for the electronics associated with high-capacity services. AT&T/WCOM Ex. 14P (Pitkin Surreb.) at 49.

³⁵ Verizon's claim that there is insufficient SONET electronics to serve remote wire centers is inconsequential. During the hearings, Messrs. Pitkin and Turner testified that they had reviewed this Verizon criticism and determined that it had little impact on costs. Tr. 5607-09 (Turner, Pitkin); AT&T/WCOM Response to Record Request No. 21 (11/29/01).

Similarly, Verizon is wrong about its inability to recover its costs due to use of the DS-0 equivalent approach. Verizon Cost Br. at 149-50. Verizon's erroneous assumption of the 24 DS-0 equivalents per DS-1 skews Verizon's mathematical example in its brief. *Id.* Moreover, AT&T/WorldCom's inclusion of these high capacity costs in its loop calculations involves taking *all* loop investment and spreading the costs of that investment among the DS-0, DS-1 and DS-3 services. In allocating the costs among the various services, AT&T/WorldCom clearly allow Verizon to recover *all* the associated costs from the total universe of UNEs, and thus Verizon has no cost recovery shortfall. Mr. Pitkin illustrated this point in AT&T Ex. 129 showing full cost recovery using his approach and demonstrating that Verizon's methodology would over-recover the total investment for all services. Tr. 4479-86 (Pitkin).

3. Synthesis Model Road Factor

Relying in part on a Kansas Corporation Commission study, AT&T/WorldCom adopted a 0.9 road factor to correct for the Synthesis Model's use of surrogate customer location data that overstates dispersion. Verizon response in essence is the "Toto" defense: "you're not in Kansas anymore." Verizon Cost Br. at 167-68. But that defense is misplaced.³⁶ The Kansas study represents a careful review and comparison of actual customer locations with surrogate

³⁶ Mr. Murphy's analysis of sheath feet does not support its argument. Verizon Ex. 109 (Murphy Reb.) at 101-04; Verizon Cost Br. at 167-68. Mr. Murphy states that the ARMIS sheath distances are greater than the modeled sheath distances and cites this relationship to argue that a downward adjustment is incorrect. His argument is wrong for three reasons. First, one would expect a TELRIC model to produce significantly less sheath distance because the network is not built piecemeal to address incremental demand as it develops, but is designed to reach all existing demand in an efficient design. Second, the existing network is likely to have more duplicative sheaths in the network due to plant reinforcement than would exist in the forward-looking network developed by the Synthesis Model. Finally, Mr. Murphy is comparing apples-to-oranges because he is comparing Synthesis Model route distances with sheath distances. AT&T/WCOM Ex. 14P (Pitkin Surreb.) at 57-59.

locations, a point conceded by Verizon witness Frank Murphy who called the study “a good empirical analysis.” Tr. 4415 (Murphy). The Kansas study concluded that a 15% downward adjustment was appropriate. Although Kansas and Virginia are different states, there is nothing about the *customer location information* that would make the Kansas results inapplicable to Virginia. Moreover, the results of the BellSouth cost model (and its geocoded location data), which generated approximately half the distribution miles of the FCC’s default Synthesis Model is similarly powerful evidence that the use of surrogate customer information overstates dispersion. AT&T/WCOM Ex. 1 (Pitkin Dir.) at 21. These results, from various geographic areas, demonstrate that AT&T/WorldCom’s 0.9 road factor is appropriate.

4. Maximum Loop Length

Verizon contends that, because the Synthesis Model purportedly violates Carrier Serving Area (“CSA”) standards concerning the maximum length of copper loops, the model designs loops that cannot support advanced services. Verizon Cost Br. at 167. As AT&T/WorldCom demonstrated in their initial brief, Verizon’s contention is fundamentally infirm. Indeed, the CSA standard is quite flexible and permits some copper loops to exceed more than 12,000 feet beyond the feeder/distribution interface. AT&T/WCOM Cost Br. at 128. In addition, the Commission has already recognized that copper loops that are 18,000 feet in length can “support at appropriate quality levels the services eligible for universal service support.” *Universal Service Fifth Order* ¶ 70. Furthermore, copper loops in excess of 12,000 feet as designed by the Synthesis Model can support advanced services, and Verizon has not proved and cannot prove otherwise. AT&T/WCOM Cost Br. at 128-129. And, in all events, Verizon’s argument is insignificant because fewer than 1% of the loops modeled by the Synthesis Model exceed 12,000 feet of copper. *Id.*

5. Size Of Distribution Areas

Virginia contends that “[t]he MSM completely ignores well-established outside plant design principles, which typically size serving areas at 200 to 600 living units” and “causes the MSM to model a network on which 24.8% of the survey areas exceed 600 living units.” Verizon Cost Br. at 166. Verizon states further that “the MSM produces unrealistically larger distribution areas, thereby modeling only half as many distribution areas as exist in Verizon VA’s network today.” *Id.* Verizon’s arguments are demonstrably unsound.

As AT&T/WorldCom demonstrated in their opening brief, the number of living units that can be included in a distribution area is quite flexible. Indeed, it is not uncommon for distribution areas to contain more than 600 units depending on the size of the SAI. AT&T/WCOM Cost Br. at 130. Moreover, although Verizon claims that “well-established outside design principles” preclude distribution areas containing more than 600 living units, conspicuously absent from Verizon’s submission is any reference to the fact that its own network includes distribution areas that well exceed 600 living units. *Id.*

6. Cable Sizing And Selection

AT&T/WorldCom have shown that Verizon has not challenged the Synthesis Model’s methodology using working lines and target fill factors when calculating cable size. AT&T/WCOM Cost Br. at 130. AT&T/WorldCom also have demonstrated that Verizon overstates cable unit costs by sizing cable before applying utilization factors. *Id.* Conceding that “applying utilization to increase the size of the facility studied would have produced even lower unit costs,” Verizon contends, nevertheless, that it understated cable investment by failing to account for multiple cables coming out of the serving area interface. Verizon Cost Br. at 115. Verizon’s arguments simply cannot withstand scrutiny.

By calculating cable size based solely on working lines in the UAA and then increasing costs through application of a utilization factor, Verizon understates cable size and overstates cable costs. AT&T/WCOM Cost Br. at 130. Notably, in apparent recognition that the economies of scale associated with larger cable sizes would not be realized if cable size is determined before the application of utilization factors, Verizon's prior LCAM model introduced in the Virginia proceeding included a special adjustment to offset this problem. Tr. 4452 (Baranowski). For whatever reason, Verizon abandoned that approach in this proceeding and has advanced a methodology that ensures that its cable unit costs are overstated.

Further, there is no evidence that Verizon's failure to account for the possibility that multiple cables would be used in a given UAA somehow offsets its error of sizing cable before the application of utilization factors. AT&T/WCOM Cost Br. at 132. Moreover, unlike Verizon's Model, the Synthesis Model does not incorrectly assume that a single cable would always service a given UAA, but rather calculates the number of cables that would be used efficiently in the particular UAA. *Id.* at 131; Tr. 4458 (Baranowski).

7. Cable Unit Costs

As AT&T/WorldCom have previously shown, Verizon's cable unit costs, which are based on information in its VRUC database from 1997 to 1999, are fundamentally flawed and overstated. AT&T/WCOM Cost Br. at 132. Although Verizon claims that its VRUC data are derived from actual cable installation projects, Verizon's surrebuttal testimony, coupled with the anomalies in Verizon's data showing consistent increases in cable costs across different structure types and cable sizes over the selected three-year period, demonstrates that the cable costs used in Verizon's Model appear to be estimates. AT&T/WorldCom also have shown that Verizon's inclusion of 1998 data in calculating cable unit costs grossly distorts and yields an overstatement of cable unit costs. *Id.*

Verizon contends that “[b]ecause the VRUC prices are averaged first through Verizon VA’s linear regression analysis, and then through the process of calculating average loop investment across the entire network, there is no reason to believe that the patterns in the VRUC data produce any distortion in UNE loop rates.” Verizon Cost Br. at 96 n.98. Verizon’s explanation cannot withstand scrutiny.

The fact that 1998 cable costs are substantially higher than those for 1997 and 1999 when inflation over that same period was reasonably stable renders Verizon’s 1998 data highly suspect. *See* AT&T/WCOM Cost Br. at 132; AT&T/WCOM Ex. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 33-34; Verizon Ex. 122 (Verizon Recurring Cost Panel Surreb.) at 94. In an effort to diminish the significance of these anomalies, Verizon contends that the variability in its data “reflects the fact that the total installed cost of a given year’s cable placement projects *may be higher* than in the previous year because the jobs performed in the later year were more complex or time-consuming, or were performed under more adverse weather conditions, thus resulting in significantly increased installation costs.” Verizon Cost Br. at 96 (emphasis added). However, if anything, Verizon’s argument simply highlights that cable installations from an arbitrary snapshot of years are not representative of the costs that would be incurred by a forward-looking entrant.

Furthermore, it must be emphasized that Verizon possesses the data which could possibly explain the reasons for the spike in 1998 unit costs. Tellingly, instead of providing such data, along with an empirical analysis explaining the factual underpinnings of the spike in 1998 unit costs, Verizon simply invites the Commission to accept its word that its data are accurate and reflect the cable unit costs that would be incurred in a forward-looking environment. However, the current record provides no sound basis for such a conclusion, and the Commission should not rise to the bait. Verizon’s 1997 and 1999 data are similar to each other and much

lower than its 1998 data, and Verizon has proffered no probative, empirical evidence demonstrating precisely why its 1998 cable unit costs are so much higher than those in 1997 and 1999. AT&T/WCOM Cost Br. at 133. Accordingly, the conclusion reached by AT&T and WorldCom that Verizon's 1998 data are entirely aberrational and should be eliminated is entirely reasonable. *Id.* at 132.

8. DLC Costs

a. The Assumed Mix Of DLC Technology

AT&T/WorldCom have previously shown that a new entrant employing the least-cost technology would deploy exclusively GR-303 technology in its network. To assume otherwise would result in an overstatement of costs. *See* AT&T/WCOM Cost Br. at 133-143.

By contrast, the “mix” assumed in Verizon's cost model is plainly inconsistent with forward-looking cost principles. Verizon assumes that, in a forward-looking network, 70 percent of the fiber-fed loops would use Integrated DLC (“IDLC”) and 30 percent of fiber-fed loops will use Universal DLC (“UDLC”) – and that only 10 percent of all loops would be served using GR-303 technology.³⁷ Verizon Cost Br. at 88; Verizon Switch Cost Br. at 12-13. These estimates, however, are plainly improper, because they are based on Verizon's embedded network – not on the efficient network that could be deployed today. AT&T/WCOM Ex. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 22-23. For example, Verizon's “mix” of IDLC and UDLC is based on its installation of DLC during the last three years. *See* AT&T/WCOM Cost Br. at 141; Verizon Ex. 107 (Verizon Recurring Cost Panel Direct) at 97.

Similarly, Verizon bases its assumption of 10% GR-303 equipment on the fact that less than one-tenth of one percent of the total working loops in the Verizon—East footprint

³⁷ The remaining IDLC loops would be provisioned over older-generation, less efficient TR-008 technology, according to Verizon.

are currently served via GR-303 technology, and Verizon “has no plans to deploy GR-303.” Verizon Cost Br. at 94; Verizon Switch Cost Br. at 12-13 & n.20. Far from being “aggressive” and “very generous,” the 10 percent figure is totally arbitrary – as evidenced by Verizon’s failure to explain why it used that particular percentage, as opposed to a lower or higher one. Verizon Ex. 107 (Verizon Recurring Cost Panel Direct) at 98; Verizon Ex. 122 (Verizon Recurring Cost Panel Surreb.) at 185.

The various arguments that Verizon makes in defense of its approach are without merit. First, the record refutes Verizon’s argument that UDLC is necessary to provide non-switched services and unbundled loops. *See* Verizon Cost Br. at 89; Verizon Switch Cost Br. at 13. **[BEGIN VERIZON PROPRIETARY]**

[END VERIZON PROPRIETARY] This fact is confirmed by other Verizon documents, documents from other ILECs and Telcordia, and Mr. Gansert’s testimony. AT&T/WCOM Cost Br. at 135-136.

Second, there is no basis for Verizon’s contention that it is not technically feasible to unbundle stand-alone loops using GR-303. Verizon Cost Br. at 90-93; Verizon Switch Cost Br. at 13-14. **[BEGIN VERIZON PROPRIETARY]**

[END VERIZON PROPRIETARY] AT&T/WCOM Cost Br. at 136-137.³⁸ In addition, as AT&T/WorldCom have

³⁸ Verizon’s attempt to rely on its “current GR-303 deployment guidelines” for its position that little, if any, GR-303 will be deployed is without merit. *See* Verizon Cost Br. at 93-94. The 2000 document to which Verizon evidently refers **[BEGIN VERIZON PROPRIETARY]**

previously shown, Verizon's alternative position that unbundling would present security and OSS "challenges" is misplaced. Such "challenges" have been resolved in the context of other UNEs and other technologies, and Verizon has offered no basis for believing that they could not be resolved in the context of unbundling loops for GR-303. *Id.* at 136-140.

Indeed, the examples that Verizon cites refute its contentions regarding the purported difficulty of unbundling loops for GR-303. WorldCom's 1998 presentation regarding GR-303 deployment issues concluded that, although the implementation of GR-303 presented technical issues and challenges, WorldCom was confident that all such challenges "can be successfully resolved with cooperation and support from the vendors, the ILECs, and Bellcore." Verizon Ex. 155, Slide 10; Tr. 4580 (Gansert); Verizon Cost Br. at 90. Furthermore, although Verizon asserts that Telcordia (formerly Bellcore) has "been trying to resolve these issues for years" (Verizon Cost Br. at 91), Telcordia determined that in updating its SCIS model, GR-303 (not TR-008) was the forward-looking DLC technology to use with Lucent's new SM-2000 switch module – an obvious recognition that GR-303 is not only forward-looking, but technically feasible. *See* AT&T/WCOM Switch Cost Br. at 4-5; AT&T/WCOM Ex. 24P (Pitts Supp. Surreb.) at 6-7. Moreover, SBC is using GR-303 throughout its network in its much-touted Project Pronto AT&T/WCOM Ex. 11P (Murray Reb.) at 36-37.

Evidently recognizing the lack of merit in its claims regarding the technical feasibility of unbundling, Verizon makes the strained argument that the prospects of developing the ability to unbundle loops using GR-303 "are dimming, not growing," because circuit switching

[END VERIZON PROPRIETARY] *See*

AT&T/WCOM Cost Br. at 134 n.120.

technologies “are on the verge of becoming technologically obsolete due to emerging packet switching technologies.” Verizon Cost Br. at 91. As previously stated, however, Verizon’s own planning documents **[BEGIN VERIZON PROPRIETARY]**

[END VERIZON PROPRIETARY] and Telcordia’s recent determination regarding the SM-2000 switch module belie the notion that GR-303 is about to become “technologically obsolete.” In any event, Verizon cannot have it both ways; it cannot argue that GR-303 is not “commercially available today” due to the fact that certain issues must be resolved before GR-303 will be deployed, while assuming that a technology that is merely “emerging” (packet switching) will ultimately be fully deployed and available in the market.

Verizon’s arguments cannot mask the fact that, because it has chosen to deploy relatively little GR-303 on its existing network (due to the technological constraints of its embedded switch investment), Verizon has lacked the initiative to work with vendors on GR-303. The evidence shows that an efficient carrier designing a forward-looking network would use GR-303 and take all necessary steps (including working with vendors) to eliminate any issues that might otherwise hinder the most efficient use of GR-303 technology. AT&T/WCOM Cost Br. at 140-141; AT&T/WCOM Ex. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 29-30. Thus, notwithstanding Verizon’s contention to the contrary (Verizon Cost Br. at 90-92 & n.90), GR-303 is “commercially available today,” because it is the technology that a new entrant would choose if it were constructing a network today. AT&T/WCOM Cost Br. at 141.³⁹

³⁹Verizon asserts that AT&T and WorldCom’s use of IDLC “disregard[s] the fact that the use of IDLC is only practical and economical in locations where customers can be served from remote terminals in groupings of a minimum of 96 lines.” Verizon Switch Cost Br. at 14. This is incorrect. The economics of the particular situation in terms of number of customers, length of cable, any necessary electronics, and other factors will determine whether it is economical to serve a customer using IDLC. IDLC is cost effective for longer loop lengths even for small numbers of customers.

b. DLC Input Values

Verizon asserts that the input for DLC hardware costs in the Synthesis Model are understated because they are lower than those adopted by the Commission in the universal service proceeding, and are supported only by “Mr. Riolo’s unsubstantiated opinion,” without “a single shred of supporting documentation.” Verizon Cost Br. at 147-149 & n.154. This argument is without merit.

Mr. Riolo’s estimates of DLC equipment not only were based on his own experience in purchasing DLC common equipment, but also are the same as those developed by AT&T engineers and other experts. AT&T/WCOM Ex. 6 (Riolo Dir.) at 18. In his direct and surrebuttal testimony, he explained in detail the various bases for his recommended input values, including the costs of DLC hardware and graphics identifying each plug-in circuit card for the Common Control Assembly and Channel Bank Assembly which comprise a Litespan System platform. *Id.* at 13-36; AT&T/WCOM Ex. 18P (Riolo Surreb.) at 12-14. Most notably, although Verizon claims that he produced no “supporting documentation,” Mr. Riolo cited Verizon’s own purchasing contract with Litespan and a recent market forecast report prepared by the RHK company. He testified – without contradiction – that in both documents, the costs for DLC hardware are *lower* than those he recommended. AT&T/WCOM Ex. 18P (Riolo Surreb.) at 12-14.⁴⁰

⁴⁰ Verizon is disingenuous in criticizing Mr. Riolo for failing to actually include the Litespan contract and the RHK report with his testimony. Verizon Cost Br. at 149 n.154. The Litespan contract was obtained from Verizon in discovery, and Verizon did not dispute Mr. Riolo’s analysis of the DLC hardware costs in that contract. Moreover, the RHK report is copyrighted. In his responses to Verizon’s data requests, Mr. Riolo provided Verizon with detailed information about the RHK report so that it could purchase the report if it so desired. AT&T/WCOM Ex. 18P (Riolo Surreb.) at 12 n.17.

c. **Concentration Of GR-303**

Verizon asserts that its use of a 3:1 line concentration ratio is a “reasonable assumption” that represents “the maximum line concentration that would be appropriate in the forward-looking network.” Verizon Switch Cost Br. at 14-15. The record, however, shows otherwise. **[BEGIN VERIZON PROPRIETARY]**

[END VERI-

ZON PROPRIETARY]

The various factors that Verizon cites to support the “reasonableness” of its 3:1 ratio do not withstand scrutiny. *See* Verizon Switch Cost Br. at 15-16. For example, although Verizon asserts that “[p]hone line usage is increasing with increased internet use” (*id.* at 15), such growth has slowed significantly in recent years, due to the increase in wireless and non-circuit-switched alternatives (such as DSL) to residential second lines previously purchased for data service. There is no evidence that circuit-switched line growth will be significant in the future. *See, e.g.,* AT&T/WCOM Switching Cost Br. at 9-10; AT&T/WCOM Ex. 20 (Murray Surreb.) at 42-43.⁴² Similarly, although Verizon contends that IDLC is more likely to be placed

⁴¹ In Vermont, Verizon assumed concentration ratios for older-generation IDLC that is not as efficient as GR-303 ranging between 6:1 and 8:1 as shown in its workpapers Part B, Pages 37-41. Docket No. 5713, October 31, 1997.

⁴² Verizon’s reliance on the testimony of AT&T/WCOM witness Pitts to support its claim of increasing phone usage due to increased Internet use is misplaced. *See* Verizon Switch Cost Br.

in locations with a high number of customers concentrated in close proximity with its each other (Verizon Switch Cost Br. at 15-16), it offers no empirical data to support the bald assertions of its witnesses that customers in high-concentration areas have higher usage than customers in other areas. Verizon Ex. 122 (Verizon Recurring Cost Panel Surreb.) at 186.

Finally, Verizon's various criticisms of the restatement of its own cost model by AT&T/WorldCom overlook the fact that in the Synthesis Model, AT&T/WorldCom did not change the 1:1 concentration ratio used by the Commission in calculating costs for universal service purposes. Thus, the Synthesis Model *overstates* costs. AT&T/WCOM Cost Br. at 144.

d. EF&I Factors

As AT&T/WorldCom showed in their Initial Brief, Verizon has substantially overstated the Engineer, Furnish & Install ("EF&I") factor that it applies to DLC equipment costs. Verizon's own data on EF&I show that the EF&I for plug-ins is very small, and that the EF&I for equipment is grossly overstated. AT&T/WCOM Cost Br. at 144-145.

Verizon attempts to justify its EF&I factor by citing Mr. Minion's testimony that "because the DCPR database does not allocate EF&I costs to plug-in equipment, the EF&I factor for plug-in equipment consists *only* of sales tax: all the associated installation costs are recorded in the hardwire EF&I factor." Verizon Cost Br. at 59 (citing Tr. 5081-5082; emphasis in original). The testimony cited by Verizon, however, is entitled to no weight. First, Mr. Minion originally testified, in response to lengthy questioning by Commission Staff and counsel for AT&T on October 31, that Verizon did *not* allocate engineering and installation charges on a pro rata share based on the material cost of investment. Tr. 4633-4639, 5080-5081 (Minion). Yet,

at 15. Ms. Pitts testified that such growth has slowed significantly: "[S]ome of the ILECs claim they had to move up their gross schedule for Internet usage, *of course, since the Internet usage is sort of now being taken back off*, I don't know where that would stand." Tr. 5267 (emphasis added).

when he reappeared for questioning on November 28, he changed his position and asserted that the DCPR database assigned all of the engineering and installation charges associated with plug-in equipment to hardwire equipment. Tr. 5081-5082 (Minion). He admitted that he had “discovered” this fact only two days earlier in preparation for his testimony, during a conversation with a Verizon employee whom he had not previously consulted. Tr. 5099, 5125-5126 (Minion). Verizon, however, provided no workpapers or other documents to support Mr. Minion’s “discovery,” much less advance notice to the parties. In view of this about-face in its position, Verizon’s claim that all of the associated installation costs are recorded in the hardwire EF&I factor cannot reasonably be regarded as credible.

Second, even if Mr. Minion’s November 28 testimony is credible (and it is not), Verizon’s calculation of installation costs is based on an arbitrary allocation formula. Mr. Minion acknowledged that all of these costs “are aggregated by account, by location, and by year, and then apportioned uniformly across all of the hard-wired equipment that was placed in that year in that location for that account.” Tr. 5082 (Minion). Yet he later admitted that Verizon maintains records that would enable one to determine the actual amount of engineering time that is spent on the engineering part of the EF&I. Tr. 5108 (Minion). Verizon made no attempt to calculate the EF&I using this data – and refused to provide it in response to AT&T’s discovery requests. Tr. 5107. Finally, even Verizon’s belated rationalization does not explain the substantial discrepancies in its cost study between material costs and in-place costs. AT&T/WCOM Cost Br. at 145. For these reasons, the EF&I proposed by AT&T and WCOM should be adopted.

9. Utilization And Fill Factors

Utilization or fill factors, perhaps more starkly than any other input issue, expose the stark conflict between Verizon’s costing assumptions and the TELRIC standard. As

AT&T/WorldCom explained in their initial brief, TELRIC-compliant fill factors require two distinct analytical steps. First, one must determine the optimal economic balance between the costs of piecemeal expansion that are avoided by stockpiling extra spare capacity today, and (2) the carrying costs of that spare capacity. AT&T/WCOM Cost Br. at 145, 150. Second, in determining the share of the costs of spare capacity to be recovered from current ratepayers, one must net out the present value of the expected future contribution from additional future customers. AT&T/WCOM Cost Br. at 146-47. A network that is properly sized, with the costs of spare capacity properly apportioned between present and future ratepayers, should cost current ratepayers no more than, and possibly less than, the cost of a network built and reserved only for current ratepayers. *Id.* at 147 n. 137. Verizon's initial brief makes clear that its proposed fill factors for the Verizon and Synthesis cost models satisfy neither of these standards.

a. General Conceptual Issues

(1) Optimum Size Of The Plant

On the *sizing* of the network, Verizon offers two primary arguments. First, Verizon urges acceptance of its proposed fill factors on the ground that they replicate the utilization of Verizon's *existing* network. Verizon Cost Br. at 103-04. Second, Verizon contends that higher utilization rates would cause unacceptable degradation of service quality. *Id.* at 104-06.

Absent proof that the existing utilization factors happen to equal optimal forward-looking values, Verizon's first argument is merely an invitation to jettison the TELRIC standard in favor of embedded cost ratemaking. AT&T/WCOM Ex. 11P (Murray Reb.) 30-32. That Verizon has operated under price cap regulation since 1995 offers the Commission no basis for assuming on faith that existing fill factors are optimal. First, much of Verizon's outside plant, central office buildings, and even switching capacity was put into service before 1995. Second, price cap regulation gives Verizon no incentive to minimize the cost of facilities that will be used

wholly or largely by Verizon's competitors. *Id.* at 20-24. Hence, what the federal courts have noted about Verizon and its fill factor assumptions still holds true: "Past practice alone . . . cannot be the basis for setting forward-looking rates as required by the Act." *AT&T Communications of New Jersey, Inc. v. Bell Atlantic-New Jersey, Inc.*, Civ. No. 97-5762 (KSH) (issued June 2, 2000), slip op. at 34. The "current state of Bell's network is irrelevant for purposes of a long-run cost analysis." *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F.Supp.2d 218, 238 (D. Del. 2000).

Verizon has failed to establish that higher utilization rates would cause unacceptable deterioration in service quality. The record is devoid of any empirical cost-benefit or optimization analysis to support Verizon's bald assertion that greater utilization would cause a loss of efficiency and a degradation of service. AT&T/WCOM Ex. 12P (AT&T/WorldCom Recurring Cost Panel Reb.) at 43, 50-51; *cf.*, Verizon Cost Br. at 106. Moreover, as shown below, for many elements of the network the utilization rates that Verizon offers here as optimal are significantly below those recommended by Verizon's own engineering guidelines.

(2) Apportionment Of Costs Between Current And Future Ratepayers

As explained in the AT&T/WCOM Cost Brief, Verizon's model prices UNEs as if the level of spare capacity remains constant over time, and demand does not increase. Verizon charges present customers for capacity that will be used by future customers and then *also* charges future customers for that capacity. AT&T/WCOM Cost Br. at 148-49. This assumption is at odds with the behavior of firms in competitive markets, as well as the efficient time pattern of cost recovery for a regulated firm.⁴³ Even Dr. Shelanski acknowledged that "I would not

⁴³ *Id.* at 146-47, 149; AT&T/WCOM Ex. 11P (Murray Reb.) 32-33; AT&T/WCOM Ex. 20 (Murray Surreb.) 38-39; AT&T/WCOM Ex. 12 (Recurring Cost Panel Reb.) 42-43; *accord*, Tr. 2985:15-20 (Shelanski).

expect to see the firm recover all of its costs for the future period in a competitive market today—by all of its costs I mean to the point that it has no costs except marginal costs to recover in that second period.” Tr. 2985; *accord, id.* at 2987:4-9 (same). Verizon’s responses to this point do little more than obfuscate the issue.

First, Verizon contends that future demand should be ignored because “customers *never* pay for the full costs of the facility—or the unit of capacity on the facility—that is used to provide their service.” Verizon Cost Br. at 107. The short answer is that Verizon’s own cost model assumes just that. In developing unit costs, Verizon divides the total cost of the capacity it models by a quantity of service units equal to the existing level of demand multiplied by the life of the asset. Tr. 4206-07 (Gansert). If total demand remains constant over the life of the plant (as Verizon assumes), its model generates exactly enough revenue to cover the full costs of the facility. If total demand increases (as is likely, and as Verizon assumes in *sizing* the plant), its model generates *more* revenue than needed to cover the full costs of the facility. AT&T/WCOM Ex. 11P (Murray Reb.) at 32. The arithmetic logic is straightforward.

Second, Verizon argues that AT&T/WorldCom’s grievance is misplaced because customers do not “pay for any specific facility or share of a facility.” Verizon Cost Br. at 107.⁴⁴ Whether individual assets are reserved to particular customers or fungible and available to multiple customers is irrelevant, however, to the costing issue. “[W]hether the particular physical pair is used is not relevant,” testified Verizon witness Gansert; “certainly capacity is used.” Tr. 4205. “We expect most of it [Verizon’s spare capacity for growth] to be used over time. If we continue

⁴⁴ By Verizon’s logic, a rider on a DC Metrobus would have no right to object if Metro raised fares to levels sufficient to cover not only the cost of a seat actually used by the rider, but the cost of buying two, three or even four unused seats acquired in anticipation of future ridership growth – which future riders would also pay for. Riders on Metrobuses, after all, generally do not have reserved seats.

to grow, you in effect use all those units of capacity.” *Id.* If UNE prices are to replicate the performance of a competitive market, current ratepayers may not be required to pay for more than the *quantity* of capacity needed to serve them; prices any higher would be unsustainable in the face of competitive entry. AT&T/WCOM Cost Br. 149 & n. 139.

Third, Verizon argues that some of the spare capacity in its embedded network is necessary for administration, maintenance and short-run peak loads rather for long term future growth. Verizon Cost Br. at 108. This is an attack on a straw man. While some spare capacity is appropriately attributed to these purposes (and thus should be recovered from current ratepayers as a current cost), much of Verizon’s spare capacity is clearly reserved for future growth. Tr. 4204-05 (Gansert) (conceding that much of Verizon-Virginia’s spare plant capacity was acquired to accommodate future growth); Tr. 2992 (Tardiff) (same); *id.* at 2995 (conceding that Verizon’s cost models assume that growth will continue in the future). Under the circumstances, Verizon’s assumption that *no* spare capacity is *ever* attributable to the latter purpose is obviously nonsensical.

Finally, Verizon’s claim that *no* portion of spare capacity costs should be recovered from future ratepayers rather than current ratepayers because the “average utilization in the network” remains “stable over time” (Verizon Cost Br. at 108) makes no sense for the costing of distribution plant, which is generally sized from the outset to meet *ultimate* demand. Tr. 3000 (Tardiff) (conceding that distribution capacity is generally sized for *ultimate* demand). Within a given distribution area, the concept of “sizing for ultimate demand” means that “capacity is installed at once initially.” *Id.* Verizon’s argument also confuses the average utilization of the network *in the aggregate* with the utilization of *individual* loops, serving areas or other subcomponents of the network. When a previously idle loop is brought into revenue-generating service by increased demand, the new customer receives no credit for whatever contribution that prior